

CATHERINE WOLFRAM

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Last updated: September 24, 2023

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA August 2019 - Present
PhD in Mathematics (Expected May 2024)
Advisor: Scott Sheffield

University of Chicago, Chicago, IL September 2015 - June 2019
B.A. in Mathematics with Honors
Dean's list, 2015-2019

Stanford University Online High School September 2011 - June 2015

ARTICLES

Large deviations for the 3D dimer model, with Nishant Chandgotia and Scott Sheffield. ArXiv preprint 2304.08468.

Circle homeomorphisms with square summable diamond shears, with Dragomir Šarić and Yilin Wang. ArXiv preprint 2211.11497.

TEACHING

Recitation Instructor at MIT for four terms:

- Probability and random variables (18.600) Fall 2021, Spring 2022, Fall 2023
Instructor: Jonathan Kelner (2021), Scott Sheffield (2022, 2023)

- Multivariable calculus (18.02A) January 2023
Instructor: Bill Minicozzi

TA for Cornell Probability Summer School August 2022
Teaching assistant for course “Loewner energy and Large Deviations of SLEs” taught by Yilin Wang. Responsibilities included preparing materials and running four problem sessions.

Manager of the Math Learning Center (MLC) August 2020 - May 2021
Ran the math department's peer-tutoring center, managing 10-12 undergraduate tutors.

Grader at the University of Chicago:

- Grader for one quarter of Honors Calculus (Math 162) January 2019 - March 2019
- Course assistant (VCA) for full year of Calculus (Math 151-152-153) September 2016 - June 2017

SERVICE AND MENTORSHIP

Co-organizer of the MIT Directed Reading Program (DRP) at MIT October 2022 - Present
This program pairs undergraduate students at MIT with graduate students and postdocs to do a reading project over IAP. Around 100 undergraduate students participate each year.

Organizational responsibilities include evaluating applications, pairing undergraduate students with mentors, and arranging events during IAP.

Mentor for the MIT Directed Reading Program (DRP) 2020, 2023

Co-organizer of PuMaGraSS at MIT

September 2020 - May 2021

Weekly, casual seminar for MIT math graduate students to give talks to their peers, name stands for “Pure Math Graduate Student Seminar.”

Mentor for Research Science Institute (RSI) hosted by MIT

Summer 2020

Supervised two advanced high school students on summer research projects. I suggested projects and met with each of them daily for the duration of the program.

TALKS

Past and upcoming talks as of now, listed in reverse chronological order.

1. Workshop on Probabilistic Field Theories, Aalto University June 2024
2. IPAM workshop “Statistical Mechanics Beyond 2D” May 2024
3. MIT probability seminar November 2023
4. University of Chicago probability and statistical physics seminar November 2023
5. Brown combinatorics seminar November 2023
6. Informal seminar: dynamics, geometry, and moduli spaces at Harvard November 2023
7. Probability and geometry in, on and of non-Euclidean spaces at CIRM (lightning talk) October 2023
8. ICERM workshop “Asymptotic Limits of Discrete Random Structures” September 2023
9. Harvard CMSA probability seminar September 2023
10. MIT integrable probability seminar September 2023
11. dimers2023 conference, Sorbonne Universite July 2023
12. Percolation today (online) June 2023
13. LA probability forum (joint between Caltech, UCLA, and USC) May 2023
14. Informal analysis and probability seminar at IHES April 2023
15. Courant probability and mathematical physics seminar March 2023
16. Rutgers geometry/topology seminar (online) March 2023
17. Informal seminar: dynamics, geometry, and moduli spaces at Harvard February 2023
18. CUNY Hyperbolic geometry seminar February 2023
19. Random Geometry and Statistical Physics Workshop, University of Pennsylvania October 2022
20. Probability and Mathematical Physics conference in Helsinki, Finland July 2022
21. PuMaGraSS seminar at MIT April 2022
Gluing polygons, Wick’s formula, and moduli spaces
22. Reading group on the dimer model at MIT March 2022
Kasteleyn theory on the torus
23. PuMaGraSS seminar at MIT April 2021
The dimer model in 2D and 3D, local moves, and topology
24. AWM Women in Math Symposium, University of Chicago February 2017
Recursive derivation of $2n$ -gon topologies.

ACADEMIC VISITS

Institute for Advanced Study, Princeton, NJ September 2022 - December 2022
Visiting graduate student while my advisor was there as a visiting professor.

Institut des Hautes Études Scientifiques, Bures sur Yvette, France April 2023 - May 2023
Invited researcher visiting Prof. Yilin Wang.

CONFERENCES AND SUMMER SCHOOLS

A more complete list of conferences, summer schools, and workshops I've attended or plan to attend as of now, in reverse chronological order.

Workshop on Probabilistic Field Theories, Aalto University, Helsinki, Finland June 2024

Statistical physics and random surfaces, Oberwolfach, Germany May 2024

Statistical mechanics beyond 2D, IPAM, Los Angeles, CA May 2024

Probability and geometry in, on and of non-Euclidean spaces, CIRM, Marseille, France October 2023

Asymptotic limits of discrete random structures, ICERM, Providence, RI September 2023

dimers2023 conference, Sorbonne Universite, Paris, France July 2023

Three facets of gravity workshop, Humboldt University, Berlin, Germany May 2023

Random Geometry and Statistical Physics Workshop, University of Pennsylvania, Philadelphia, PA
October 2022

Cornell Probability Summer School (as a TA), Cornell University, Ithaca, NY August 2022

Probability and Mathematical Physics conference, Helsinki, Finland July 2022

The Analysis and Geometry of Random Spaces, MSRI, Berkeley, CA March 2022
Program associate for two weeks of the semester program (including the one week workshop)

Random Geometry conference, CIRM, Marseille, France January 2022

Random Conformal Geometry Summer School, MSRI, Berkeley, CA (virtual) July 2021

OTHER

Citizenships: United States, United Kingdom